

AMENDMENT TO CLAIMS

Please amend the claims of the application as indicated by inserting the underlined matter and deleting the matter lined through:

1 1. (Currently amended) A structural panel fabricated of synthetic resin material for
2 driving into soils and forming walls, piers, and dikes, comprising:

3 said structural panel being elongated and of constant size and shape along its length and
4 characterized by having been extruded lengthwise;

5 said structural panel including in cross section:

6 a central wall section including an inner surface, an outer surface, and opposed
7 side wall sections co-planar with said central wall section and forming with said inner
8 wall section a substantially flat outer surface of the structural panel;

9 a male locking element disposed on and extending laterally from one of said side
10 wall sections, a female locking element disposed on and extending laterally from the
11 other of said side wall sections, said female locking element being configured to slidably
12 receive and retain said male locking element of a duplicate structural panel, said male and
13 female locking elements configured to not protrude beyond the substantially flat outer
14 surface of the structural panel; and

15 first and second strengthening flanges integrally formed on said inner surface, said
16 first and second strengthening flanges being both substantially perpendicular to said
17 central wall section and to said side sections and substantially parallel to each other, said

18 first and second strengthening flanges extending along said length of said structural panel
19 and with said central wall section forming a U-shape with the opening of the U-shape
20 facing away from said central wall section such that access is available between the
21 strengthening flanges along the length of the structural panel.

1 2. (Currently amended) The structural panel of claim 1, further including a
2 strengthening sheet having been member encased in said material by extrusion of said structural
3 panel and shielded by said material from contact with the outside environment.

1 3. (Currently amended) The structural panel of claim 2, wherein said strengthening
2 sheet member comprises metal sheet material, said strengthening sheet member being U-shaped
3 in cross section, and wherein said strengthening member is disposed in said U-shape of said
4 structural panel formed by said first and second strengthening flanges and said central wall
5 section.

1 4. (Cancelled)

1 5. (Currently amended) The structural panel of claim 2 [4], wherein said
2 strengthening sheet member is comprised of material selected from the group consisting
3 essentially of: steel, galvanized steel, expanded metal, fiberglass and aluminum.

1 6. (Currently amended) A structural panel fabricated of synthetic resin material for
2 driving into soils and forming walls, piers, and dikes, comprising:

3 said structural panel being elongated and of constant size and shape along its length and
4 characterized by having been extruded lengthwise;

5 said structural panel including in cross section:

6 a central wall section including an inner surface, an outer surface, and opposed
7 side wall sections co-planar with said central wall section;

8 a locking elements disposed on and extending laterally from the side wall sections
9 for connecting duplicate structural panels together in side-edge to side-edge relationship,

10 first and second strengthening flanges integrally formed on said inner surface, said
11 first and second strengthening flanges being both substantially perpendicular to said
12 central wall section and substantially parallel to each other, said first and second
13 strengthening flanges extending along said length of said structural panel and with said
14 central wall section forming a U-shape with the opening of the U-shape facing away from
15 said central wall section such that access is available between the strengthening flanges
16 along the length of the structural panel,

17 The structural panel of claim 3,

18 ~~wherein~~ said strengthening flanges each including ~~include~~ a distal edge and a
19 secondary flange extending from said distal edge of each of said strengthening flanges
20 and extending away from the other strengthening flange such that said secondary flanges
21 are substantially perpendicular to said strengthening flanges.

1 7. (Currently amended) A structural panel fabricated of synthetic resin material for
2 driving into soils and forming walls, piers, and dikes, comprising:
3 said structural panel being elongated and of constant size and shape along its length and
4 characterized by having been extruded lengthwise;
5 said structural panel including in cross section:
6 a central wall section including an inner surface, an outer surface, and opposed
7 side wall sections co-planar with said central wall section;
8 locking elements disposed on and extending laterally from said side wall sections
9 for connecting duplicate ones of the structural panels together, said locking elements
10 configured such that the locking elements do not extend beyond the plane of the central
11 wall section and the opposed side wall sections of the connected structural panels,
12 first and second strengthening flanges integrally formed on said inner surface, said
13 first and second strengthening flanges being both substantially perpendicular to said
14 central wall section and substantially parallel to each other, said first and second
15 strengthening flanges extending along said length of said structural panel and with said
16 central wall section forming a U-shape with the opening of the U-shape facing away from
17 said central wall section such that access is available between the strengthening flanges
18 along the length of the structural panel,
19 ~~The structural panel of claim 3, further comprising:~~
20 a first plurality of retention apertures disposed along the length of said first
21 strengthening flange;

22 a second plurality of retention apertures disposed along the length of said second
23 strengthening flange; and

24 wherein said retention apertures are configured to receive retention means
25 between said first and second strengthening flanges, said retention means being
26 configured to retain said structural panel in a fixed position in relation to the soils into
27 which said structural panel is driven.

1 8. (Previously presented) A barrier wall comprising a series of structural panels of
2 the type described in claim 7, wherein said retention means further comprise:

3 an anchor bar configured to pass through one of said retention apertures of each said first
4 and second pluralities of retention apertures such that said anchor bar is disposed substantially
5 parallel to said central wall section and substantially perpendicular to said first and second
6 strengthening flanges;

7 an anchor sheet configured to extend between said first and second strengthening flanges
8 and be securely attached to said anchor bar; and

9 wherein said anchor sheet is connected to said structural panel by said anchor bar such
10 that said anchor sheet extends outwardly into the soils disposed behind said structural panel,
11 thereby securing said structural panel adjacent the soils.

1 9. (Currently amended) The structural panel of claim 2 3, wherein said strengthening
2 ~~sheet member~~ is comprised of expanded metal, said expanded metal defining a plurality of
3 perforations.

1 10. (Currently amended) A structural panel for driving into soils and forming walls,
2 piers, and dikes, comprising:

3 said structural panel being elongated and of constant size and shape along its length and
4 fabricated of synthetic resin material and characterized by having been extruded lengthwise;

5 said structural panel including in cross section:

6 a central wall section including an inner surface, an outer surface, and opposed
7 side wall sections co-planar with said central wall section and forming with said inner
8 wall a substantially flat outer surface of the structural panel;

9 locking elements disposed on and extending laterally from said side wall sections
10 configured for locking duplicate ones of the structural panels together,

11 first and second strengthening flanges integrally formed on said inner surface, said
12 first and second strengthening flanges being both substantially perpendicular to said
13 central wall section and to said side sections and substantially parallel to each other, said
14 first and second strengthening flanges extending along said length of said structural panel
15 and with said central wall section forming a U-shape with the opening of the U-shape
16 facing away from said central wall section such that access is available between the
17 strengthening flanges along the length of the structural panel.

1 The structural panel of claim 9, further comprising:

2 a first plurality of retention apertures disposed along the length of said first
3 strengthening flange;

4 a second plurality of retention apertures disposed along the length of said second
5 strengthening flange; and

6 retention means received in said retention apertures configured to extend from
7 between said first and second strengthening flanges and retain said structural panel in a
8 fixed position in relation to the soils into which the structural panel is driven.

1 11. (Original) The structural panel of claim 10, wherein said retention means further
2 comprise:

3 an anchor bar configured to pass through one of said retention apertures of each said first
4 and second pluralities of apertures such that said anchor bar is disposed substantially parallel to
5 said central wall section and substantially perpendicular to said first and second strengthening
6 flanges;

7 an anchor sheet configured to be securely attached to said anchor bar; and
8 wherein said anchor sheet is connected to said structural panel by said anchor bar such that said
9 anchor sheet extends outwardly into the soils disposed behind said structural panel, thereby
10 securing said structural panel adjacent the soils.

1 12. (Previously presented) The structural panel of claim 10, wherein each of said
2 retention apertures of said first and second pluralities of retention apertures extends through one
3 of said perforations of said expanded metal such that said strengthening member is encapsulated
4 within said structural panel.

1 13. (Original) The structural panel of claim 9, wherein said expanded metal is
2 comprised of material selected from the group consisting of: steel and galvanized steel.

1 14. (Previously presented) The structural panel of claim 2, wherein said strengthening
2 member comprises fiberglass, said strengthening member being U-shaped in cross section, and
3 wherein said strengthening member is disposed in a similarly U-shaped portion of said structural
4 panel formed by said first and second strengthening flanges and said central wall section.

1 15. (Original) The structural panel of claim 14, wherein said strengthening member is
2 perforated.

1 16. (Currently amended) A method of installing a driven wall structure for retaining
2 soils, the wall including a means for retaining the wall in a fixed position relative to the soils, a
3 series of elongated structural panels, each said structural panel being elongated and of constant
4 size and shape along its length, and shaped for being manufactured in one piece by extrusion,
5 each having an upper end portion and a lower end portion, opposed inner and outer surfaces, said
6 outer surface being substantially flat, elongated opposed side edges having locking elements
7 shaped for slidably connecting to the side edges of an adjacent structural panels with the outer
8 surfaces of the adjacent panels arranged in the same plane and the locking elements not
9 extending beyond the plane of the outer surfaces, and a pair of spaced, parallel strengthening
10 flanges extending from the inner surface, comprising the steps of:

11 joining the locking element ~~one~~ of the opposed side edges with the locking element of
12 each structural panel to one of the opposed side edges of a previously driven structural panel and
13 driving the lower end portion of each structural panel into the soil, thereby forming the wall
14 structure with a flat an outside surface;

15 attaching the means for retaining to the strengthening flanges of the structural panels; and
16 disposing soil ~~both~~ about the means for retaining and between the strengthening flanges
17 and adjacent the inner surfaces of the structural panels.

1 17. (Previously presented) The method of claim 16, wherein the step of attaching the
2 means for retaining to the strengthening flanges further comprises:

3 passing an anchor bar through the strengthening flanges such that the anchor bar is
4 substantially parallel to the wall structure;
5 securing an anchor sheet to the anchor bar, thereby securing the anchor sheet to the wall
6 structure; and

7 extending the anchor sheet outwardly from the inner surface of the wall structure such
8 that the anchor sheet is substantially perpendicular to the wall structure and rests on the existing
9 soil.

1 18. (Previously presented) The method of claim 16, wherein the step of attaching the
2 means for retaining to the strengthening flanges further comprises:

3 securing a plurality of anchor members to the strengthening flanges, each anchor member
4 having a proximal end secured to one of the strengthening flanges and a distal end extending
5 outwardly from the wall structure;

6 securing the distal end of each anchor member to an anchor wall, the anchor wall being
7 substantially parallel to the wall structure.

1 19. (Previously presented) A driven wall structure for retaining soil, comprising:
2 a plurality of structural panels, each said panel being elongated and of constant size and
3 shape along its length and shaped for being continuously manufactured, including in cross
4 section:

5 a central wall section including an inner surface and an outer surface, opposed first and
6 second side wall sections on opposite sides of said central wall section co-extensive with said
7 central wall section and forming the structural panel with a planar outer surface;

8 a first locking element disposed on and extending laterally from said first side wall
9 section, a second locking element disposed on and extending laterally from said second side wall
10 section, said first and second locking elements being configured to slidably receive and retain
11 locking elements of similar structural panels and lock the structural panels together in edge-to-
12 edge relationship; and

13 said first and second locking elements being formed such that the locking elements do not
14 protrude beyond the plane of the outer surface of said structural panel, such that when a plurality
15 of the structural panels are assembled in parallel inner locking side-edge to side-edge relationship
16 to form the driven wall structure, the driven wall structure has a substantially planar outer surface
17 without the locking elements protruding beyond the planar outer surface;

18 at least one strengthening flange integrally formed on said inner surface of said central
19 wall section, said strengthening flange being substantially perpendicular to said central wall
20 section and extending along said length of said structural panel;

21 a plurality of anchor sheets, each said anchor sheet being securely attached to said
22 strengthening flange of a panel one of said anchor bars and extending outwardly from said wall
23 structure; and

24 wherein the soil is disposed about said strengthening flange and about said anchor sheets
25 such that the weight of the soil retains the wall structure in a desired position.

1 20. (Original) The wall structure of claim 19, wherein said structural panel further
2 comprises a strengthening member comprised of expanded steel, said strengthening member
3 being substantially L-shaped in cross-section, and wherein said strengthening member is
4 disposed in a similarly L-shaped portion of said structural panel formed by said strengthening
5 flange and a portion of said central wall section.

1 21. (Original) The wall structure of claim 20, wherein said structural panel is
2 comprised of a material selected from the group consisting of: polyvinyl chloride, polypropylene
3 and polyethylene.

1 22. (Previously presented) The wall structure of claim 20, wherein said strengthening
2 member has a thickness of approximately .010 inches to .750 inches.

23. (Previously presented) The wall structure of claim 19, wherein said structural panel further comprises:

said strengthening flange includes a first strengthening flange and a second strengthening flange forming a U-shape with said panel; and

a strengthening member comprised of metal, said strengthening member being U-shaped in cross section, and wherein said strengthening member is disposed in a similarly U-shaped portion of said structural panel formed by said first and second strengthening flanges and a portion of said central wall disposed therebetween.

24. (Original) The wall structure of claim 23, wherein said strengthening member is further comprised of expanded metal, said expanded metal defining a plurality of perforations, and wherein each of said anchor bars extends through said perforations such that said strengthening member is encapsulated within said structural panel.

25. (Original) The wall structure of claim 23, wherein said strengthening member is comprised of a material selected from the group consisting of: steel and galvanized steel.

26. (Original) The wall structure of claim 19, wherein said structural panel further comprises:

a first and a second strengthening flange; and

a strengthening member comprised of fiberglass, said strengthening member being U-shaped in cross section, and wherein said strengthening member is disposed in a similarly U-

6 shaped portion of said structural panel formed by said first and second strengthening flanges and
7 a portion of said central wall disposed therebetween.

1 27. (Currently amended) A barrier wall comprising:
2 a series of duplicate structural panels positioned in edge-to-edge interlocked relationship,
3 said structural panels formed of resin material, and a strengthening sheet having been
4 encased within said resin material by extrusion of the resin material about the strengthening sheet
5 of each said panel, so that said strengthening sheet provides additional strength to said resin
6 material and the structural panels can be driven into the earth and said strengthening sheet is
7 shielded from contact with the atmosphere by said resin material.

8
1 28. (Currently amended) The barrier wall of claim 27, wherein said strengthening
2 sheet is ~~formed of~~ selected from a group of materials consisting essentially of: metal, expanded
3 metal, and fiberglass ~~said sheet defining an array of perforations there through.~~

1 29. (Original) The barrier wall of claim 28, wherein said sheet is formed of expanded
2 metal.

1 30. (Previously presented) The barrier wall of claim 28, and further including
2 anchor bars mounted to said panels, and anchor sheets connected to said anchor
3 bars.

1 31. (Original) The barrier wall of claim 27, and further including
2 anchor sheets extending from said panels for burying in soil, and connection means
3 connecting said anchor sheets to said panels.

1 32. (Original) The barrier wall of claim 27, and further including
2 anchor sheets of open net configuration extending from said panels for burying in soil to
3 hold the barrier wall upright.

1 33. (Currently amended) A structural panel for driving into soils and forming with
2 duplicate structural panels a driven wall, said structural panel comprising:

3 a panel that is elongated and of constant size and shape along its length and shaped for
4 being continuously manufactured in one piece,

5 said panel including in cross section:

6 an inner surface and a flat ~~an~~-outer surface opposed to said inner surface, and
7 opposed side edges;

8 elongated locking elements formed on said opposed side edges configured to
9 slidably receive and retain a locking element of a duplicate structural panel and join the

duplicate structural panels in side-by-side relationship with the outer surfaces of the joined panels aligned and forming a flat wall surface; ~~and~~

said locking elements being formed such that the locking elements do not protrude beyond the flat outer surface of the panel, such that when a plurality of the structural panels are assembled in inner-locking side-edge to side-edge relationship with their outer surfaces aligned to form a straight wall with an outer surface, the locking elements do not protrude beyond the outer surface of the straight wall, and

said material having been extruded about a strengthening member that is positioned in said structural panel and said strengthening member is protected by said material of said structural panel from contact with other objects.

34. (Currently amended) The structural panel of claim 33, and further including:
strengthening flanges integrally formed on said inner surface of said panel
extending along the length of said panel at intervals spaced from each other and spaced from said elongated locking elements and extending away from said inner surface, ~~and~~
said strengthening flanges together with a portion of said panel forming a U-shape
with the opening of the U-shape facing away from said inner surface such that access is available
between the strengthening flanges along the length of the structural panel, and
said strengthening panels defining retention apertures for connecting said strengthening panels to an anchor wall.

1 35. (Previously presented)The structural panel of claim 34 and further including:
2 secondary strengthening flanges formed on said strengthening flanges, said
3 secondary strengthening flanges extending away from each other.

1 36. (Previously presented)The structural panel of claim 33, wherein said and further
2 including:
3 a strengthening member is formed of sheet material and is positioned in said U-
4 shape. ~~and encased in said material and protected by said material from contact with other~~
5 ~~objects.~~